



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/799,951      | 03/12/2004  | John W. Haim         | I-2-0459.1US        | 8032             |

24374 7590 01/23/2008

VOLPE AND KOENIG, P.C.

DEPT. ICC

UNITED PLAZA, SUITE 1600

30 SOUTH 17TH STREET

PHILADELPHIA, PA 19103

EXAMINER

FOTAKIS, ARISTOCRATIS

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

01/23/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/799,951

Applicant(s)

HAIM ET AL.

Examiner

Aristocratis Fotakis

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12/20/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 - 4, 6 - 9 and 12 - 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 4, 6 - 9 and 12 - 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 3 – 7, 12 – 15 and 18 – 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Webster et al (US 6,748,200).

Re claims 3 and 12, Webster teaches of a receiver comprising: a gain control loop (AGC loop, Fig.1) configured to process samples of a data signal received with respect to a selected timeslot of a time frame including; a gain control for applying a gain factor to samples of the data signal (Col 11, Lines 35 – 41, Col 12, Lines 1 - 16); a saturation detection circuit (#137, Fig.1) configured to process samples from the gain control in selected groups to determine a number of samples within a group which exceed a saturation criteria (Col 12, Lines 17 – 62, Figs.1 and 3); a gain control adjustment circuit (#141, #147, #149, Fig.1) operatively associated with said gain control and said saturation detection circuit (#137, Fig.1) to adjust the gain factor (gain

adjustment, Col 9, Lines 5 - 55) applied by the gain control (GC, Fig.1) based in part on group saturation numbers (SF, Fig.1, SC, Fig.3, Col 12, Lines 17 - 62) determined by the saturation detection circuit while processing the data signal received with respect to the selected timeslot of time frame (Col 11, Lines 35 - 43 and Col 12, Lines 17 - 62) such that: an initial gain factor (*initialization functions, appropriate gain settings*, Fig.4, Col 12, Lines 63 - 67 to Col 13, Lines 1 - 20 and Col 15, Lines 23 - 30) is applied to a first group of samples of the data signal received in the selected timeslot for which a first group saturation number (SC) is determined by the saturation detection circuit (Col 11, Lines 30 - 41 and Col 15, Lines 23 - 30), a gain factor adjusted (GADJ, Fig.1) based in part on the first group saturation number (#149, Fig.1) is applied to a second group of samples of the data signal received in the selected timeslot for which a second group saturation number is determined by the saturation detection circuit (AGC loop, Col 9, Lines 5 - 42), and a gain factor (GADJ, Fig.1, *different from the one above*) adjusted based in part on the second group saturation number is applied to a third group of samples of the data signal received in the selected timeslot (AGC loop, Fig.1 and 4, *The AGC loop continuously tracks and adjusts the gain for ever group of samples*).

Re claims 4 and 13, Webster teaches of the gain control loop configured to process a plurality of samples of the data signal received in the selected timeslot between processing said first group of samples and said second group of samples and to process a plurality of samples of the data signal received in the selected timeslot

between processing said second group of samples and said third group of samples (Col 9, Lines 15 – 20).

Re claims 5 and 14, Webster teaches of the gain control adjustment circuit configured to make gain factor adjustments using a power correction factor (SPE, Figs.1 and 2).

Re claims 6 and 15, Webster teaches of the gain control adjustment circuit is configured to make gain factor adjustments using a power correction factor (SPE, Figs.1 and 2) that is based in part upon a group saturation number (CC, Fig.3 and SF, Fig.1) determined by the saturation detection circuit (#137, Figs.1 and 3).

Re claims 18 and 19, Webster teaches of a wireless transmit receive unit (WTRU) or a base station (*transceiver, radio or wireless communications*, Col 1, Lines 30 - 35) comprising the receiver.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmutz et al (US Pub 2001/0048727) in view of Fukuda et al (US 5,353,305).

Schmutz teaches of a method for determining an initial setting of a gain control loop of a receiver for processing a data signal received in a selected timeslot of a current time frame of a time frame format (Paragraph 0029); the method comprising: storing (#130, RAM, Fig.3) a setting of the gain control loop for the selected timeslot (Paragraph 0030, Lines 1 – 4) with respect to a preceding time frame (Paragraph 0030, Lines 20 – 25); and adjusting said stored setting by a correction factor (gain adjustment factor, Paragraph 0031, Lines 24 – 28). However, Schmutz does not specifically teach of selecting between the adjusted stored setting and a predetermined fixed value to provide said initial setting.

Fukuda teaches of an automatic equalizer comprising a line equalizer (#22, Figs.8 and 9), AGC circuit (#27) and A/D converter (#28); a switch (#30) for switching the fixed initial gain  $G_i$  and the most adaptive gain  $G_F$  obtained by an arithmetic operation by the AGC circuit (Col 7, Lines 25 – 67 to Col 8, Lines 1 – 10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a fixed gain setting value for initialization and a switch to switch to the adaptive gain setting for an appropriate gain control.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schumtz and Fukuda in view of Yang (US Pub 2003/0139160).

Schumtz and Fukuda teach all the limitations of claim 1 except of the correction factor that is used to adjust said stored setting is  $10^{\Delta/20}$ , where  $\Delta$  is a predetermined offset from 0 to -20dB, and said predetermined fixed value is  $10^{i/20}$  where  $i$  is in the range of 0 to -75 dB.

Yang teaches of an automatic gain control circuit with a very wide operational range, less hardware, and faster response, and more flexibility includes a signal strength estimator, a gain adjusting factor device and a multiplier. After the signal strength estimator finds signal strength, the gain adjusting factor device will generate a gain adjusting factor corresponding to the signal strength. Then the multiplier will update gain by multiplying it the gain adjusting factor (Abstract). Yang teaches of an adjusting factor  $\beta = R^\alpha$  where  $R$  is the reference signal and  $\alpha$  is the adjusting coefficient (Paragraphs 0014 – 0017).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used factor  $\beta = R^\alpha$  to design an AGC circuit with a preferred relation between signal strength and gain adjusting factor with wide operational range, fast response time and less hardware. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied the claimed gain factor settings, since it has been held that discovering an optimum



value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webster in view of Zamat (US 6,314,278).

Webster teaches all the limitations of claims 3 and 12 as well as the gain control adjustment circuit is configured to make gain factor adjustments using a power correction factor that is based in part upon a group saturation number determined by the saturation detection circuit (see claim 7 and 15). Webster does not specifically teach of the use of a lookup table to receive the determined number and to output the power correction factor.

Zamat teaches of adjusting gain in a receiver using received signal sample values (title of invention and Abstract). the gain control adjustment circuit is configured to make gain factor adjustments using a power correction factor that is based in part upon a group saturation number determined by the saturation detection circuit by using a lookup table ( table of Fig.4) to receive the determined number and to output the power correction factor (Fig.4, Col 5, Lines 15 – 45).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a look-up table to apply a power correction factor according to the number of samples that have been saturated.

Claims 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webster in view of Mutojo et al. (US 20040151264).

Webster teaches all the limitations of claims 3 and 12 except of the use of an erase circuit.

Montejo teaches of a receiver operating to AGC a multi-carrier signal through a corresponding number of inner loops and an outer loop AGC processes (Abstract). Montejo teaches of threshold comparison where there are a couple of options to be used. The first option is to set a maximum front-end Attenuation level so that a minimum number of bits are allocated to represent the signal/noise input at the ADC input. The second option is not setting any constraint on the maximum front-end attenuation. By not setting any constraint on the maximum front-end attenuation, the signal of interest may be removed from the ADC produced signal. Effectively, the first option preserves a minimum number of bits allocated to the signal of interest at the expense of not closing the loop to the Active State set point and hence allowing some additional saturation. If the unwanted signal power is so large that severely saturates the ADC for the maximum attenuation allowed, the recovery of the signal of interest may become also impossible. However, if the attenuation is not too severe, the signal may be recoverable (Paragraph 0031).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used an erase circuit to compare the number with a

threshold so as to decide whether the data segment can be recovered or removed due to severe saturation.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aristocratis Fotakis whose telephone number is (571) 270-1206. The examiner can normally be reached on Monday - Thursday 6:30 - 4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:  
10/799,951  
Art Unit: 2611

Page 11

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AF



CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER